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PATENT  
Attorney Docket No.: 015389-002611US  
Client Reference No.: 018/063C



On February 25, 2003

TOWNSEND and TOWNSEND and CREW LLP

By: Maisie C. Livengood  
Maisie C. Livengood

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Geron Corporation

Application No.: 09/432,503

Filed: November 2, 1999

For: HUMAN TELOMERASE  
CATALYTIC SUBUNIT

Examiner: Peter P. Tung

Art Unit: 1652

SUPPLEMENTAL INFORMATION  
DISCLOSURE STATEMENT UNDER 37  
CFR §1.97 and §1.98

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The references cited on attached form PTO/SB/08A and PTO/SB/08B are being called to the attention of the Examiner. With the exception of references AV, AW and AX, copies of which are enclosed, copies of the references can be found in U.S. Patent Application 08/912,951 filed August 14, 1997 (now U.S. Patent 6,475,789, issued November 5, 2002).

It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR 1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and no

representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

This IDS is being filed before the mailing date of the final Office Action or Notice of Allowance.

Please charge the IDS fee of \$180 to Deposit Account No. 20-1430. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,



Scott L. Ausenhus  
Reg. No. 42,271

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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Substituted Patent 1449A/PTO

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STATEMENT BY APPLICANT**

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Sheet **3** of **12****Complete if Known**

Application Number	09/432,503
Filing Date	November 2, 1999
First Named Inventor	Cech, Thomas R., et. al.
Art Unit	1652
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Attorney Docket Number	015389-002611US

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**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
	AA	08/751,189	11-15-96	Harrington, et al.	
	AB	60/038,750	02-20-1997	Counter, et al.	
	AC	3,817,837	06-18-1974	Tanenholtz et al.	
	AD	3,850,752	11-26-1974	Schuurs et al.	
	AE	3,939,350	02-17-1076	Kronick et al.	
	AF	3,996,345	12-01-1976	Ullman et al.	
	AG	4,275,149	06-23-1081	Litman et al.	
	AH	4,277,437	07-07-1981	Maggio	
	AI	4,366,241	12-28-1982	Tom et al.	
	AJ	4,683,195	07-28-1987	Mullis et al.	
	AK	4,683,202	07-28-1987	Mullis	
	AL	4,816,567	03-28-1989	Cabilly et al.	
	AM	4,965,188	10-23-1990	Mullis et al.	
	AN	5,489,508	02-06-1996	West et al.	
	AO	5,583,016	12-10-1996	Villeponteau et al.	
	AP	5,747,317	05-05-1998	Cao	
	AQ	5,770,422	06-23-1998	Collins	
	AR	6,093,809	07-25-2000	Cech, et al.	
	AS	6,258,535 - B1	07-10-2001	Villeponteau et al.	
	AT	6,261,556 - B1	07-17-2001	Weinrich et al.	
	AU	6,261,836 - B1	07-17-2001	Cech et al.	
	AV	6,093,809	07-25-2000	Cech et al.	
	AW	6,166,178	12/26-2000	Cech et al.	
	AX	6,475,789 B1	11-05-2002	Cech et al.	

**FOREIGN PATENT DOCUMENTS**

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		Country Code <sup>3</sup>	Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				
	AY	JP	09154575-A		06-17-97		
	AZ	PCT	WO 84/03564		09-13-84		
	BA	PCT	WO 95/13382		05-18-95		
	BB	PCT	WO 96/01835		01-25-96		
	BC	PCT	WO 96/12811		05-02-96		
	BD	PCT	WO 96/19580		06-27-96		
	BE	PCT	WO 96/40868		12-19-96		

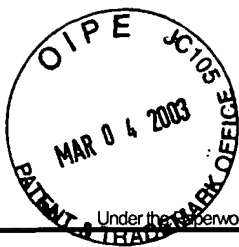
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**INFORMATION DISCLOSURE  
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Sheet

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12

**Complete if Known**

Application Number

09/432,503

Filing Date

November 2, 1999

First Named Inventor

Cech, Thomas R., et. al.

Art Unit

1652

Examiner Name

Peter P. Tung

Attorney Docket Number

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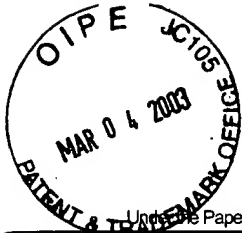
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	BF	PCT	WO 98/01542		01-15-98		
	BG	PCT	WO 98/01543		01-15-98		
	BH	PCT	WO 98/07838		03-05-98		
	BI	PCT	WO 98/08938		02-26-98		
	BJ	PCT	WO 98/21343		05-22-98		
	BK	PCT	WO 98/37181		08-27-98		
	BL	PCT	WO 98/45450		10-15-98		
	BM	PCT	WO98/59040		12/30/98		
	BN	PCT	WO99/01560		01/14/99		

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Sheet **5** of **12****Complete if Known**

Application Number	09/432,503
Filing Date	November 2, 1999
First Named Inventor	Cech, Thomas R., et. al
Art Unit	1652
Examiner Name	Peter P. Tung
Attorney Docket Number	015389-002611US

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	BO	1994 Genome Issue of <i>Science</i> (265:1981f)	
	BP	Anderson and Young, "Quantitative Filter Hybridization" in <i>Nucleic Acid Hybridization</i> pp73-111 (1985)	
	BQ	Ausubel <i>et al.</i> ; (1989); Current Protocols in Molecular Biology; pp 5.1-5.11, 16.1-16.3 and 16.9-16.20; John Wiley & Sons, New York NY	
	BR	Autexier <i>et al.</i> , "Reconstitution of human telomerase activity and identification of a minimal functional region of the human telomerase RNA," (1996) <i>EMBO J.</i> , 15:5928	
	BS	Auxexier and Greider, "Functional reconstitution of wild-type and mutant <i>Tetrahymena</i> telomerase," (1994) <i>Genes Develop.</i> , 8:563	
	BT	Berger and Kimmel, <i>Guide to Molecular Cloning Techniques</i> ; (1987); Meth. Enzymol.; vol. 152; pp 305-389; Academic Press; San Diego CA	
	BU	Biessman <i>et al.</i> , "Addition of Telomere-Associated HeT DNA Sequences "Heals" Broken Chromosome Ends in <i>Drosophila</i> ," (1990) <i>Cell</i> , 61:663	
	BV	Bitter <i>et al.</i> , "Expression and secretion vectors for yeast," Meth Enzymol., (1987) 153:516	
	BW	Blackburn and Chiou, "Non-nucleosomal packaging of a tandemly repeated DNA sequence at termini of extrachromosomal DNA coding for rRNA in <i>Tetrahymena</i> ," (1981) <i>Proc. Natl. Acad. Sci.</i> , 78:2263	
	BX	Blackburn and Gall, "A tandemly repeated sequence at the termini of the extrachromosomal ribosomal RNA genes in <i>Tetrahymena</i> ," (1978) <i>J. Mol. Biol.</i> , 120:33	
	BY	Blackburn, "Telomerases," (1992) <i>Ann. Rev. Biochem.</i> , 61:113	
		Bodnar <i>et al.</i> , "Extension of Life-Span by Introduction of Telomerase into Normal Human Cells," (1998) <i>Science</i> , 279:349	
		Bradford, "A Rapid and Sensitive method for the Quantitation of Microgram Quantities of Protein Utilizing the Principle of Protein-Dye Binding," (1976) <i>Anal. Biochem.</i> , 72:248	
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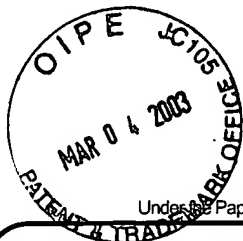
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Sheet 6 of 12

**Complete if Known**

Application Number	09/432,503
Filing Date	November 2, 1999
First Named Inventor	Cech, Thomas R., et al.
Art Unit	1652
Examiner Name	Peter P. Tung
Attorney Docket Number	015389-002611US

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		Calvio <i>et al.</i> , "Identification of hnRNP P2 as TLS/FUS using electrospray mass spectrometry," (1995) <i>RNA</i> , 1:724	
		Caruthers <i>et al.</i> , "New chemical methods for synthesizing polynucleotides," (1980) <i>Nucleic Acids Res. Symp. Ser.</i> , 215-223	
		Chan and Tye, "Organization of DNA sequences and replication origins at yeast telomeres," (1983) <i>Cell</i> , 33:563	
		Colbere-Garapin <i>et al.</i> , "A new dominant hybrid selective marker for higher eukaryotic cells," (1981) <i>J. Mol. Biol.</i> , 150:1	
		Cole <i>et al.</i> , "The EBV-hybridoma technique and its application to human lung cancer," <i>Monoclonal Antibodies and Cancer Therapy</i> , Alan R. Liss Inc., New York NY 77-96 (1985)	
		Collins <i>et al.</i> , "Purification of Tetrahymena telomerase and cloning of genes encoding the two protein components of the enzyme," (1995) <i>Cell</i> , 81:677	
		Conrad <i>et al.</i> , "RAP1 protein interacts with yeast telomeres in vivo: Overproduction alters telomere structure and decreases chromosome stability," (1990) <i>Cell</i> , 63:739	
		Coombs, <i>Dictionary of Biotechnology</i> , (1994); pp. 101-102, 283, 301 and 332; Stockton Press, New York NY	
		Cote <i>et al.</i> , "Generation of human monoclonal antibodies reactive with cellular antigens," (1983) <i>Proc. Natl. Acad. Sci.</i> , 80:2026	
		Counter <i>et al.</i> , "The catalytic subunit of yeast telomerase," (1997) <i>Proc. Natl. Acad. Sci.</i> , 94:9202	
		Counter <i>et al.</i> , (1994) <i>Proc. Natl. Acad. Sci.</i> , 91:2900	
		Creighton; <i>Proteins, Structures and Molecular Principles</i> ; (1983); pp. 1-60; WH Freeman and Co; New York, NY	
		Dieffenbach and Dveksler; <i>PCR Primer, a Laboratory Manual</i> ; (1995) pp. 131-156, 453-462 and 507-580; Cold Spring Harbor Press, Plainview NY	
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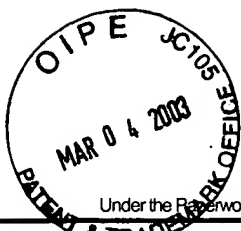
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Sheet 7 of 12

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		Fang <i>et al.</i> , "Oxytricha telomere-binding protein: separable DNA-binding and dimerization domains of the $\alpha$ -subunit," <i>Genes Develop.</i> 7:870 (1993) and Gray <i>et al.</i> , (1991) <i>Cell</i> 67:807	
		Feng <i>et al.</i> , "The RNA Component of Human Telomerase," (1995) <i>Science</i> , 269:1236	
		GenBank Accession No. AA281296; April 2, 1997	
		Genbank accession no. AA299878; April 18, 1997	
		Genbank accession no. AA311750; April 19, 1997	
		Gilley <i>et al.</i> , "Altering specific telomerase RNA template residues affects active site function," (1995) <i>Genes Develop.</i> , 9:2214	
		Gottschling and Cech, "Chromatin Structure of the Molecular Ends of Oxytricha Mononuclear DNA: Phased Nucleosomes and a Telomeric Complex," (1984) <i>Cell</i> , 38:501	
		Gottschling and Zakian, "Telomere proteins: specific recognition and protection of the natural termini of Oxytricha macronuclear DNA," (1986) <i>Cell</i> 47:195	
		Grant <i>et al.</i> , <i>Meth Enzymol.</i> , (1987) 153:516-544	
		Greenwood <i>et al.</i> , "Phylogenetic relationships within the class oligohymenophorea, phylum ciliophora, inferred from the complete small subunit rRNA gene sequences of <i>Colpidium campylum</i> , <i>Glaucoma chattoni</i> , and <i>Opisthionecta henneguyi</i> ," (1991) <i>J. Mol. Evol.</i> , 3:163	
		Greider and Blackburn, "A telomeric sequence in the RNA of Tetrahymena telomerase required for telomere repeat synthesis," (1989) <i>Nature</i> , 337:331	
		Greider and Blackburn, "Identification of a specific telomere terminal transferase activity in Tetrahymena extracts," (1985) <i>Cell</i> , 43:405	
		Greider, "Telomerase is processive," (1991) <i>Mol. Cell. Biol.</i> , 11:4572	
		Greider, "Telomere Length Regulation," (1996) <i>Ann. Rev. Biochem.</i> , 65:337	

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		Hampton <i>et al.</i> ; <i>Serological Methods a Laboratory Manual</i> ; (1990); pp. 33-86, 179-286; APS Press, St Paul MN	
		Harrington <i>et al.</i> , "A Mammalian Telomerase-Associated Protein," (1997) <i>Science</i> , 275:973	
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		Hartman and Mulligan, "Two dominant-acting selectable markers for gene transfer studies in mammalian cells," (1988) <i>Proc. Natl. Acad. Sci.</i> , 85:8047	
		Henderson and Blackburn, "An overhanging 3' terminus is a conserved feature of telomeres," (1989) <i>Mol. Cell. Biol.</i> , 9:345	
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		Hudson <i>et al.</i> , "An STS-based map of the human genome," (1995) <i>Science</i> , 270:1945	
		Huse <i>et al.</i> , "Generation of a large combinatorial library of the immunoglobulin repertoire in phage lambda," (1989) <i>Science</i> , 246:1275	
		Johnson <i>et al.</i> , (1991) <i>Mol. Cell Biol.</i> 11:1	
		Kilian <i>et al.</i> , "Isolation of a candidate human telomerase catalytic subunit gene, which reveals complex splicing patterns in different cell types," (1997) <i>Hum. Mol. Genet.</i> , 6:2011	
		Kipling and Cooke, "Hypervariable ultra-long telomeres in mice," (1990) <i>Nature</i> 347:400	
		Klobutcher <i>et al.</i> , "All gene-sized DNA molecules in four species of hypotrichs have the same terminal sequence and an unusual 3' terminus," (1981) <i>Proc. Natl. Acad. Sci.</i> , 78:3015	
		Koehler and Milstein, "Continuous cultures of fused cells secreting antibody of predefined specificity," (1975) <i>Nature</i> 256:495	
		Kosbor <i>et al.</i> , "The production of monoclonal antibodies from human lymphocytes," (1983) <i>Immunol. Today</i> 4:72	

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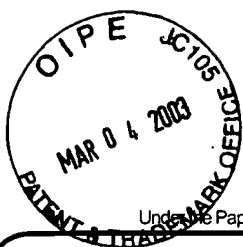
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PTO/SB/08B (10-01)

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 9

of

12

**Complete if Known**

Application Number	09/432,503
Filing Date	November 2, 1999
First Named Inventor	Cech, Thomas R., et. al.
Art Unit	1652
Examiner Name	Peter P. Tung
Attorney Docket Number	015389-002611US

**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		Lamond and Sproat; (1994) "Isolation and Characterization of Ribonucleoprotein Complexes," In <i>RNA Processing: A Practical Approach</i> ; (Higgins, S.J. and Hawes, B.D, Eds.), Volume 1; pp103-140	
		Lamond <i>et al.</i> , "Probing the structure and function of U2 snRNP with antisense oligonucleotides made of 2'-OME RNA," (1989) <i>Cell</i> , 58:383	
		Lendvay <i>et al.</i> , "Senescence mutants of <i>Saccharomyces cerevisiae</i> with a defect in telomere replication identify three additional EST genes," (1996) <i>Genetics</i> , 144	
		Lingner <i>et al.</i> , "Purification of telomerase from <i>Euplotes adeiculus</i> : requirement of a primer 3' overhang," (1996) <i>Proc. Natl. Acad. Sci.</i> , 93:10712	
		Lingner <i>et al.</i> , "Reverse transcriptase motifs in the catalytic subunit of telomerase," (1997) <i>Science</i> , 276:561	
		Lingner <i>et al.</i> , "Telomerase RNAs of different ciliates have a common secondary structure and a permuted template," (1994) <i>Genes Develop.</i> , 8:1984	
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		Lowy <i>et al.</i> , "Isolation of transforming DNA: Cloning the hamster apt gene," (1980) <i>Cell</i> , 22:817	
		Lustig and Petes, Identification of yeast mutants with altered telomere structure," (1986) <i>Proc. Natl. Acad. Sci.</i> , 83:1398	
		Maddox <i>et al.</i> , "Elevated serum levels in human pregnancy of a molecule immunochemically similar to eosinophil granule major basic protein," (1983) <i>J. Exp. Med.</i> , 158:1211	
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		Merrifield, "Solid phase peptide synthesis. I. The synthesis of a tetrapeptide," (1963) <i>J. Am. Chem. Soc.</i> , 85:2149	

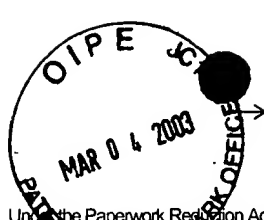
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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet **10** of **12****Complete if Known**

Application Number	09/432,503
Filing Date	November 2, 1999
First Named Inventor	Cech, Thomas R., et. al.
Art Unit	1652
Examiner Name	Peter P. Tung
Attorney Docket Number	015389-002611US

**RECEIVED****MAR 07 2003****TECH CENTER 1600/2900****OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

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		Meyerson <i>et al.</i> , "hEST2, the Putative Human Telomerase Catalytic Subunit Gene, Is Up-Regulated in Tumor Cells and during Immortalization," (1997) <i>Cell</i> , 90:785	
		Murray, <i>In McGraw Hill Yearbook of Science and Technology</i> , (1992) McGraw Hill, New York NY, pp 191-196	
		Nakamura <i>et al.</i> , "Telomerase Catalytic Subunit Homologs from Fission Yeast and Human," (1997) <i>Science</i> , 277:955	
		Nakayama <i>et al.</i> , "TLP1: A Gene Encoding a Protein Component of Mammalian Telomerase Is a Novel Member of WD Repeats Family," (1997) <i>Cell</i> , 88:875	
		Nielsen <i>et al.</i> , (1993) "Peptide nucleic acids (PNAs): Potential antisense and anti-gene agents," <i>Anticancer Drug Des.</i> , 8:53	
		Oka <i>et al.</i> , "Inverted terminal repeat sequence in the macronuclear DNA of <i>Stylonychia pustulata</i> ," (1980) <i>Gene</i> , 10:301	
		Olovnikov, "A theory of marginotomy: The incomplete copying of template margin in enzymic synthesis of polynucleotides and biological significance of the phenomenon," (1973) <i>J. Theor. Biol.</i> , 41:181	
		Orlandi <i>et al.</i> , "Cloning immunoglobulin variable domains for expression by the polymerase chain reaction," (1989) <i>Proc. Natl. Acad. Sci.</i> , 86:3833	
		Prescott, "The DNA of ciliated protozoa," (1994) <i>Microbiol. Rev.</i> , 58:233	
		Price, (1993) <i>Blood Rev.</i> , 7:127	
		Rhodes <i>et al.</i> , "Transformation of maize by electroporation of embryos," (1995) <i>Meth. Mol. Biol.</i> , 55:121	
		Roberge <i>et al.</i> , "A strategy for a convergent synthesis of N-linked glycopeptides on a solid support," (1995) <i>Science</i> , 269:202	
		Romero and Blackburn, "A conserved secondary structure for telomerase RNA," (1991) <i>Cell</i> , 67:343	
		Sambrook <i>et al.</i> , <i>Molecular Cloning, A Laboratory Manual</i> ; (1989); pp. 8.1-8.86 and 16.1-17.44; Cold Spring Harbor Press, Plainview NY	

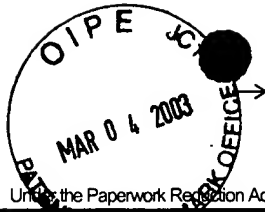
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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet **11** of **12****Complete if Known**

Application Number	09/432,503
Filing Date	November 2, 1999
First Named Inventor	Cech, Thomas R., et. al.
Art Unit	1652
Examiner Name	Peter P. Tung
Attorney Docket Number	015389-002611US

**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		Sandell <i>et al.</i> , "Transcription of yeast telomere alleviates telomere position effect without affecting chromosome stability," (1994) <i>Proc. Natl. Acad. Sci.</i> , 91:12061	
		Sanger <i>et al.</i> , "DNA sequencing with chain-terminating inhibitors," (1977) <i>Proc. Natl. Acad. Sci.</i> , 74:5463	
		Scharf <i>et al.</i> , "Heat stress promoters and transcription factors," (1994) <i>Result Probl. Cell Differ.</i> 20:125	
		Shampay and Blackburn, "Generation of telomere-length heterogeneity in <i>Saccharomyces cerevisiae</i> ," (1988) <i>Proc. Natl. Acad. Sci.</i> , 85:534	
		Sheen and Levis, "Transposition of the LINE-like retrotransposon TART to <i>Drosophila</i> chromosome termini," (1994) <i>Proc. Natl. Acad. Sci.</i> , 91:12510	
		Singer and Gottschling, "TLC1: Template RNA Component of <i>Saccharomyces cerevisiae</i> Telomerase," (1994) <i>Science</i> 266:404	
		Starling <i>et al.</i> , "Extensive telomere repeat arrays in mouse are hypervariable," (1990) <i>Nucleic Acids Res.</i> , 18:6881	
		Swanton <i>et al.</i> , "Arrangement of Coding and Non-coding Sequences in the DNA Molecules Coding for rRNAs in <i>Oxytricha</i> sp.," (1980) <i>Chromosoma</i> 77:203	
		Tommerup <i>et al.</i> , "Unusual chromatin in human telomeres," (1994) <i>Mol. Cell. Biol.</i> , 14:5777	
		Trask, "Fluorescence in situ hybridization: application in cytogenetics and gene mapping," (1991) <i>Trends Genet.</i> , 7:149	
		Verma <i>et al.</i> , "Human Chromosomes: A Manual of Basic Techniques," (1988); pp. 4-30, 152-190; Pergamon Press, New York NY	
		Watson, "Origin of concatemeric T7 DNA," (1972) <i>Nature New Biol.</i> , 239:197	
		Weinrich <i>et al.</i> , "Reconstitution of human telomerase with the template RNA component hTR and the catalytic protein subunit hTRT," (1997) <i>Nat. Genet.</i> , 17(4):498-502	
		Wellinger <i>et al.</i> , "Origin activation and formation of single-strand TG <sub>1-3</sub> tails occur sequentially in late S phase on a Yeast linear plasmid," (1993) <i>Mol. Cell. Biol.</i> , 13:4057	

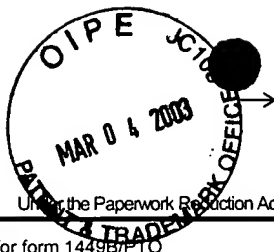
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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet **12** of **12****Complete if Known**

Application Number	09/432,503
Filing Date	November 2, 1999
First Named Inventor	Cech, Thomas R., et. al.
Art Unit	1652
Examiner Name	Peter P. Tung
Attorney Docket Number	015389-002611US

**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		Wellinger <i>et al.</i> , "Saccharomyces Telomeres Acquire Single-Strand TG <sub>1-3</sub> Tails Late in S Phase," (1993) <i>Cell</i> 72:51	
		Whitehead Institute/MIT Center for Genome Research, Genetic Map of the Mouse, Database Release 10, April 28, 1995	
		Wigler <i>et al.</i> , "Transfer of purified herpes virus thymidine kinase gene to cultured mouse cells," (1977) <i>Cell</i> , 11:223	
		Wigler <i>et al.</i> , "Transformation of mammalian cells with an amplifiable dominant-acting gene," (1980) <i>Proc. Natl. Acad. Sci.</i> , 77:3567	
		Winter and Milstein, "Man-made antibodies," (1991) <i>Nature</i> , 349:293	
		Wright <i>et al.</i> , "Saccharomyces telomeres assume a non-nucleosomal chromatin structure," (1992) <i>Genes Develop.</i> , 6:197	
		Yu <i>et al.</i> , "In vivo alteration of telomere sequences and senescence caused by mutated Tetrahymena telomerase RNAs," (1990) <i>Nature</i> , 344:126	
		Zahler and Prescott, "Telomere terminal transferase activity in the hypotrichous ciliate <i>Oxytricha nova</i> and a model for replication of the ends of linear DNA molecules," (1988) <i>Nucleic Acids Res.</i> , 16:6953	
		Zakian, Telomeres: Beginning to Understand the End," (1995) <i>Science</i> 270:1601	
		Zaug <i>et al.</i> , "Catalysis of RNA Cleavage by a Ribozyme Derived from the Group I Intron of Anabaena Pre-tRNA <sup>Leu</sup> ," (1996); <i>Nucleic Acids Research</i> ; 24:532-533	

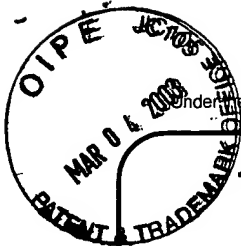
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# TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/432,503
Filing Date	November 2, 1999
First Named Inventor	Cech, Thomas R.
Art Unit	1652
Examiner Name	Delia M. Ramirez
Attorney Docket Number	015389-002611US

Total Number of Pages in This Submission

1

## ENCLOSURES (Check all that apply)

☒ Fee Transmittal Form

☐ Fee Attached

☐ Amendment / Reply

☐ After Final

☐ Affidavits/declaration(s)

☐ Extension of Time Request

☐ Express Abandonment Request

☒ Information Disclosure Statement  
copies of 3 of the cited  
references)

☐ Certified Copy of Priority  
Document(s)

☐ Response to Missing Parts/  
Incomplete Application

☐ Response to Missing Parts  
under 37 CFR 1.52 or 1.53

☒ Drawing(s) (103 pages formal  
drawings)

☐ Licensing-related Papers

☐ Petition

☐ Petition to Convert to a  
Provisional Application

☐ Power of Attorney, Revocation  
Change of Correspondence Address

☐ Terminal Disclaimer

☐ Request for Refund

☐ CD, Number of CD(s)

☐ After Allowance Communication to  
Group

☐ Appeal Communication to Board of  
Appeals and Interferences

☐ Appeal Communication to Group  
(Appeal Notice, Brief, Reply Brief)

☐ Proprietary Information

☐ Status Letter

☒ Other Enclosure(s)  
(please identify below):

Return Postcard; Amendment -  
Submission of Substitute Specification;  
Substitute Specification; Marked-up  
version of specification; original  
Appointment of Associate Attorney  
(submitted by facsimile on 12/2/02)

Remarks

The Commissioner is authorized to charge any additional fees to  
Deposit Account 20-1430.

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm  
or  
Individual

Townsend and Townsend and Crew LLP  
Scott L. Ausenhus

Reg. No. 42,271

Signature

Date

February 25, 2003

## CERTIFICATE OF TRANSMISSION/MAILING

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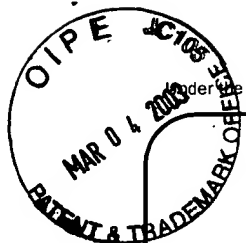
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# FEE TRANSMITTAL for FY 2003

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 180

Complete if Known

Application Number 09/432,503  
Filing Date November 2, 1999  
First Named Inventor Cech, Thomas R.  
Examiner Name Delia M. Ramirez  
Group Art Unit 1652  
Attorney Docket No. 015389-002611US

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## METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ MoneyOrder ☐ Other ☐ None

☒ Deposit Account:

Deposit  
Account  
Number

20-1430

Deposit  
Account  
Name

Townsend and Townsend and Crew LLP

The Commissioner is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments  
☒ Charge any additional fee(s) during the pendency of this application  
☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
1001	750	2001	375	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	520	2003	260	Plant filing fee	
1004	750	2004	375	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1)

(\$)

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims	Fees from below	Fee Paid
Total Claims	<input type="text"/>	<input type="text"/>	<input type="text"/>
Independent Claims	<input type="text"/>	<input type="text"/>	<input type="text"/>
Multiple Dependent	<input type="text"/>	<input type="text"/>	<input type="text"/>

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	84	2201	42	Independent claims in excess of 3
1203	280	2203	140	Multiple dependent claim, if not paid
1204	84	2204	42	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2)

(\$)

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Fee Code	Entity Fee (\$)	Small Fee Code	Entity Fee (\$)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	410	2252	205	Extension for reply within second month	
1253	930	2253	465	Extension for reply within third month	
1254	1,450	2254	725	Extension for reply within fourth month	
1255	1,970	2255	985	Extension for reply within fifth month	
1401	320	2401	160	Notice of Appeal	
1402	320	2402	160	Filing a brief in support of an appeal	
1403	280	2403	140	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,300	2453	650	Petition to revive - unintentional	
1501	1,300	2501	650	Utility issue fee (or reissue)	
1502	470	2502	235	Design issue fee	
1503	630	2503	315	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Petitions related to provisional applications	
1806	180	1806	180	Submission of Information Disclosure Stmt	180
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	750	2809	375	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	750	2810	375	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	750	2801	375	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) \_\_\_\_\_

\*Reduced by Basic Filing Fee Paid SUBTOTAL (3)

(\$180)

## SUBMITTED BY

Complete (if applicable)

Name (Print/Type) Scott L. Auserhus Registration No. (Attorney/Agent) 42,271 Telephone 303-571-4000  
Signature [Signature] Date February 25, 2003

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